CLAIMS

1. An optical fiber comprising a core comprising silica and a cladding surrounding the core *characterized in that* the core is doped with at least about 6 mol% germania and at least about 0.9 wt% fluorine.

2. The optical fiber of claim 1, wherein the core is doped with at least about 7 mol% germania.

3. The optical fiber of claim 1 or claim 2, wherein the core is doped with at least about 1.2 wt% fluorine.

4. The optical fiber of any one of the preceding claims, wherein the core is substantially devoid of boron.

5. The optical fiber of any one of the preceding claims, wherein the core includes no other dopants in substantial amounts.

6. The optical fiber of any one of the preceding claims, wherein the optical fiber has a numerical aperture of less than about 0.22 at 1550 nm.

7. The optical fiber of any one of the preceding claims, wherein the core exhibits an index change of at least about 5.5×10^{-4} at a wavelength of 1550 nm when exposed to a dose of radiation having a wavelength of 244 nm and an energy of 428 J through a phase mask yielding an interference pattern with a visibility of about 80%, said exposure being performed without hydrogen loading of the optical fiber.

8. The optical fiber of any one of the preceding claims wherein the core exhibits a ratio of index change at 1550 nm to numerical aperture of at least about 3.0×10^{-3}, the index change being caused by an exposure in the absence of hydrogen loading to a dose of radiation having a wavelength of 244 nm and an energy of 428 J through a phase mask yielding an interference pattern with a visibility of about 80%.

9. The optical fiber of any one of claims 1-6, wherein a Bragg grating is present in the core of the optical fiber.

10. The use of the optical fiber claimed in any one of claims 1-5 in a method of fabricating a fiber Bragg grating comprising exposing a section of the optical fiber to patterned UV radiation, thereby writing the grating in the core of the fiber.

11. The use claimed in claim 10 in which the said section is so exposed without hydrogen-loading of the fiber.

12. A method of fabricating a fiber Bragg grating, the method comprising the steps of

providing an optical fiber comprising

a core, the core comprising silica doped with at least about 6 mol% germanium and at least about 0.9 wt% fluorine, and

a cladding surrounding the core; and

exposing a section of the optical fiber to patterned UV radiation, thereby writing the grating in the core of the fiber.

13. The method of claim 12, wherein the exposure is performed without hydrogen loading of the fiber.

14. The method of claim 12 or claim 13, wherein the core of the optical fiber is doped with at least about 7 mol% germania.

15. The method of an one of claims 12-14, wherein the core of the optical fiber is doped with at least about 1.2 wt% fluorine.

16. The method of any one of claims 12-15, wherein the core of the optical fiber is substantially devoid of boron.

17. The method of any one of claims 12-16, wherein the core of the optical fiber includes no other dopants in substantial amounts.

18. The method of any one of claims 12-17 wherein the optical fiber has a numerical aperture of less than about 0.22 at 1550 nm.

19. The optical fiber of claim 1, wherein the cladding comprises a material selected from the group consisting of substantially undoped silica, germania-fluorine co-doped silica, and phosphorus-fluorine co-doped silica.

20. The optical fiber of claim 1, wherein the optical fiber has a numerical aperture of less than about 0.16 at 1550 nm.

21. The optical fiber of claim 1, wherein the core exhibits a ratio of saturated index change at 1550 nm in the absence of hydrogen loading to numerical aperture is at least about 9.0×10^{-2}

22. The method of claim 12, wherein the cladding of the optical fiber comprises a material selected from the group consisting of substantially undoped silica, germania-fluorine co-doped silica, and phosphorus-fluorine co-doped silica.

23. The method of claim 12, wherein the optical fiber has a numerical aperture of less than about 0.16 at 1550 nm.

24. An optical fiber comprising

A core, the core comprising silica doped with at least about 6 mol% germania and with fluorine; and

a cladding surrounding the core,

wherein the optical fiber has a numerical aperture of less than about 0.22 at 1550 nm.

25. The optical fiber of claim 24 wherein the optical fiber has a numerical aperture of less than about 0.16 at 1550 nm.

26. The optical fiber of claim 24 wherein the core is doped with at least about 0.9 wt% fluorine.

27. The optical fiber of claim 24 wherein the core is substantially devoid of boron.